

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Mechanical Structures</b>		Code <b>1010134241010130901</b>
Field of study <b>Environmental Engineering Extramural First-</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>2 / 4</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time,part-time) <b>part-time</b>	
No. of hours Lecture: <b>10</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>10</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b> <b>3 100%</b>
<b>Responsible for subject / lecturer:</b> dr inż. Grzegorz Krzyżaniak email: grzegorz.krzyzaniak@put.poznan.pl tel. 616652034 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		<b>Responsible for subject / lecturer:</b> dr inż. Tomasz Kaźmierski email: tomasz.kazmierski@put.poznan.pl tel. 616652079 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Knowledge of selected topics in mathematics, physics, engineering mechanics, materials strength and thermodynamics
2	<b>Skills</b>	Use the knowledge to explain processes and phenomena in mechanical and flow devices
3	<b>Social competencies</b>	Awareness of the need to constantly update and supplement knowledge and skills Able to share their skills with people in the group
<b>Assumptions and objectives of the course:</b> 1. Purchase by the students skills of resolving basic problems of mechanical strength in mechanical constructions 2. Getting to know with flow devices used in heating, ventilation and air conditioning.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Basic rules of calculation and selection of the most commonly used machine connections. - [-] - [-] 2. Types, principles and ways to adjust the fan in the ventilation and air conditioning - [-]		
<b>Skills:</b> 1. Execution of construction drawings of single parts and assembly drawing of simple devices, - [-] 2. . Execution of installation drawings on rectangular projection construction layouts as well as in axonometric - [-]		
<b>Social competencies:</b> 1. The student understands the importance of engineering and its impact on the environment - [-] 2. The student is able to think and act in an enterprising way - [-] 3. The student is able to prioritize appropriately in carrying out tasks - [-]		
<b>Assessment methods of study outcomes</b>		
Lectures: Written final test Project:		
<b>Course description</b>		

<p>Mechanical loads and stresses. Fatigue strength. Uncoupled connections - welded and rivet connections, and coupled connections ? screw connections. The function of fittings. Fans and blowers ? characteristics of devices, specific measures. Types of fans. Characteristics of centrifugal fans. Axial fans ? construction, velocity and pressure pattern, supply power. Control of axial fans.</p>		
<p><b>Basic bibliography:</b></p> <p>1. Janiak M.: Urządzenia mechaniczne w inżynierii środowiska. Cz.1. Wydawnictwo Politechniki Poznańskiej 1993.                  2. Janiak M., Krzyżaniak G.: Urządzenia mechaniczne w inżynierii środowiska. Cz. 2. Wydawnictwo Politechniki Poznańskiej 1995.                  3. Praca zbiorowa: Mały Poradnik Mechanika tom I i II. Warszawa 1998</p>		
<p><b>Additional bibliography:</b></p> <p>1. Stępniewski : Pompy. PWN Warszawa</p>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>	<p><b>Time (working hours)</b></p>	
1. Participation in lectures	10	
2. Participation in project exercises	10	
3. Participation in project exercises	5	
4. Preparation (at home) for the project exercises	20	
5. Participation in consultations related to the project exercises	15	
6. Preparation for the final test	8	
7. Final test	2	
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	75	3
Contact hours	20	1
Practical activities	20	1